

WHAT IS CLAIMED IS:

1. A clevis assembly for a medical instrument comprising:
a clevis having a base and a plurality of arms extending from the base; and
an axle to extend between the plurality of arms,
wherein each of the plurality of arms is configured to accommodate a portion
of the axle, and
wherein an end of the axle includes a flared portion to engage an outer
surface of one of the plurality of arms.
2. The assembly of claim 1, wherein the axle is configured to
accommodate at least a portion of an end effector assembly.
3. The assembly of claim 1, wherein the flared portion engages the outer
surface of one of the plurality of arms so as to prevent the axle from moving
longitudinally relative to the plurality of arms.
4. The assembly of claim 1, wherein each of the plurality of arms defines
a hole to receive the axle.
5. The assembly of claim 1, wherein the flared portion is a flange.
6. The assembly of claim 1, wherein the axle has a deformed portion at
an end of the axle opposite the flared portion.

7. The assembly of claim 1, wherein each of the plurality of arms defines a U-shaped groove to receive the axle.

8. The assembly of claim 1, wherein the one of the plurality of arms defines a hole and another of the plurality of arms defines a U-shaped groove, the hole and groove for receiving the axle.

9. The assembly of claim 1, wherein the axle includes a second flared portion to engage an outer surface of another of the plurality of arms.

10. The assembly of claim 1, further comprising a reinforcing portion on at least one of the plurality of arms.

11. The assembly of claim 12, wherein the reinforcing portion includes a portion of the arm displaced outwardly.

12. A medical instrument comprising:
a handle portion;
an end effector assembly; and
an elongate member connecting the handle portion to the end effector assembly,
wherein the end effector assembly comprises:

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a clevis having a base and a plurality of arms extending from the base;
and
an axle to extend between the plurality of arms.
wherein each of the plurality of arms is configured to accommodate a
portion of the axle, and
wherein an end of the axle includes a flared portion to engage an outer
surface of one of the plurality of arms.

13. The medical instrument of claim 12, wherein the axle is configured to
accommodate at least a portion of the end effector assembly.

14. The medical instrument of claim 12, wherein the flared portion engages
the outer surface of one of the plurality of arms so as to prevent the axle from
moving longitudinally relative to the plurality of arms.

15. The medical instrument of claim 12, wherein each of the plurality of
arms defines a hole to receive the axle.

16. The medical instrument of claim 12, wherein the flared portion is a
flange.

17. The medical instrument of claim 12, wherein the axle has a deformed
portion at an end of the axle opposite the flared portion.

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18. The medical instrument of claim 12, wherein each of the plurality of arms defines a U-shaped groove to receive the axle.

19. The medical instrument of claim 12, wherein the one of the plurality of arms defines a hole and another of the plurality of arms defines a U-shaped groove, the hole and groove for receiving the axle.

20. The medical instrument of claim 12, wherein the axle includes a second flared portion to engage an outer surface of another of the plurality of arms.

21. The medical instrument of claim 12, further comprising a reinforcing portion on at least one of the plurality of arms.

22. The medical instrument of claim 21, wherein the reinforcing portion includes a portion of the arm displaced outwardly.

23. The medical instrument of claim 12, wherein the end effector assembly further comprises a pair of jaws.

24. The medical instrument of claim 12, wherein the handle portion includes an elongate portion and a spool portion slidably disposed around the elongate portion.

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25. The medical instrument of claim 12, wherein the elongate member includes a jacket covering a hollow coiled portion.

26. A method of manufacturing an end effector assembly of a medical instrument, the method comprising:

manipulating a sheet of material to form a clevis, the clevis including a base and a plurality of arms extending from the base; and

mounting an axle to the plurality of arms, the axle holding an end effector and including a first flared portion at a first end of the axle,

wherein mounting the axle includes engaging the first flared portion with an outer surface of one of the plurality of arms.

27. The method of claim 26, further comprising forming a second flared portion at a second end of the axle.

28. The method of claim 27, wherein the second flared portion engages an outer surface of another of the plurality of arms.

29. The method of claim 26, further comprising deforming a second end of the axle.

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30. The method of claim 29, wherein the deformed second end is substantially adjacent to an outer surface of another of the plurality of arms.

31. The method of claim 26, wherein the mounting includes extending the axle through a hole defined in each of the plurality of arms.

32. The method of claim 26, wherein at least one of the plurality of arms includes a groove to receive the axle.

33. The method of claim 26, wherein one of the plurality of arms has a groove and another of the plurality of arms has a hole, the groove and the hole configured to receive the axle.

34. A clevis for a medical instrument comprising:
a base; and
a plurality of arms extending from the base, at least one of the plurality of arms defining a groove configured to receive an axle.

35. The clevis of claim 34, wherein the groove is U-shaped.

36. The clevis of claim 34, further comprising a portion on the groove configured to assist in retaining the axle.

37. The clevis of claim 36, wherein the portion includes a projection.
38. The clevis of claim 34, wherein each arm has a groove.
39. The clevis of claim 34, further comprising the axle.
40. The clevis of claim 39, wherein the axle has a flared portion engaging an outer surface of one of the plurality of arms.
41. The clevis of claim 34, wherein one of the plurality of arms has a hole.
42. The clevis of claim 34, further comprising a reinforcing portion on at least one of the plurality of arms.
43. The clevis of claim 42, wherein the reinforcing portion includes a portion of the arm displaced outwardly.
44. A medical instrument comprising:
a handle portion;
an end effector assembly; and
an elongate member connecting the handle portion to the end effector assembly,
wherein the end effector assembly comprises:

a base; and

a plurality of arms extending from the base, at least one of the plurality of arms defining a groove configured to receive an axle.

45. The clevis of claim 44, wherein the groove is U-shaped.

46. The clevis of claim 44, further comprising a portion on the groove configured to assist in retaining the axle.

47. The clevis of claim 46, wherein the portion includes a projection.

48. The clevis of claim 44, wherein each arm has a groove.

49. The clevis of claim 44, further comprising the axle.

50. The clevis of claim 49, wherein the axle has a flared portion engaging an outer surface of one of the plurality of arms.

51. The clevis of claim 44, wherein one of the plurality of arms has a hole.

52. The clevis of claim 44, further comprising a reinforcing portion on at least one of the plurality of arms.

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53. The clevis of claim 52, wherein the reinforcing portion includes a portion of the arm displaced outwardly.

54. A method of manufacturing a clevis of a medical instrument, the method comprising:

manipulating a sheet of material to form a clevis, the clevis including a base and a plurality of arms extending from the base, at least one of the plurality of arms defining a groove configured to receive an axle.

55. The method of claim 54, further comprising inserting an axle into the groove.

56. The method of claim 55, wherein inserting the axle includes engaging a first flared portion of the axle with an outer surface of one of the plurality of arms.

57. The method of claim 56, wherein inserting the axle includes engaging a second flared portion of the axle with an outer surface of another of the plurality of arms.

58. The method of claim 54, wherein one of the plurality of arms has a hole to receive the axle.

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59. The method of claim 54, wherein a portion on the groove is configured to assist in retaining the axle.

60. The method of claim 59, wherein the portion on the groove includes a projection.

61. The method of claim 54, wherein each arm has a groove.

62. A clevis for a medical instrument comprising:
a base; and
a plurality of arms extending from the base,
wherein at least one of the plurality of arms includes a reinforcing portion.

63. The clevis of claim 62, wherein the reinforcing portion is a rib.

64. The clevis of claim 62, wherein the reinforcing portion is integrally formed with the at least one of the plurality of arms.

65. The clevis of claim 62, wherein the reinforcing portion includes a portion of the arm displaced outwardly.

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